



(12) **United States Patent**
Visser et al.

(10) **Patent No.:** **US 9,184,410 B2**
(45) **Date of Patent:** ***Nov. 10, 2015**

(54) **ENCAPSULATED WHITE OLEDs HAVING
ENHANCED OPTICAL OUTPUT**

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(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 633 days.

This patent is subject to a terminal dis-
claimer.

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(21) Appl. No.: **12/341,251**

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(22) Filed: **Dec. 22, 2008**

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(65) **Prior Publication Data**

US 2010/0159792 A1 Jun. 24, 2010

Office Action of U.S. Appl. No. 11/693,020 dated Oct. 29, 2009.

(Continued)

(51) **Int. Cl.**
H01L 51/50 (2006.01)
H01L 51/52 (2006.01)

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(52) **U.S. Cl.**
CPC **H01L 51/5237** (2013.01); **H01L 51/5262**
(2013.01); **H01L 51/50** (2013.01); **H01L**
51/5234 (2013.01); **H01L 2251/5361** (2013.01);
H01L 2251/558 (2013.01)

(57) **ABSTRACT**

Methods of making an integrated barrier stack and optical enhancement layer for protecting and improving the light out coupling of encapsulated white OLEDs are described. The method includes optimizing the thickness of various layers including one or more of the plasma protective layer, the initial organic layer, the initial inorganic barrier layer, and the inorganic barrier layer and polymeric decoupling layer for the barrier stack. The thickness is optimized for at least one of total efficiency, or intentional color point shift so that the encapsulated OLED has enhanced light outcoupling compared to the bare OLED.

(58) **Field of Classification Search**
CPC H01L 51/50; H01L 51/52; H01L 51/5234;
H01L 51/5237; H01L 51/5262; H01L
2251/558; H01L 2251/5361
USPC 313/498–512; 445/24, 25
See application file for complete search history.

20 Claims, 9 Drawing Sheets

